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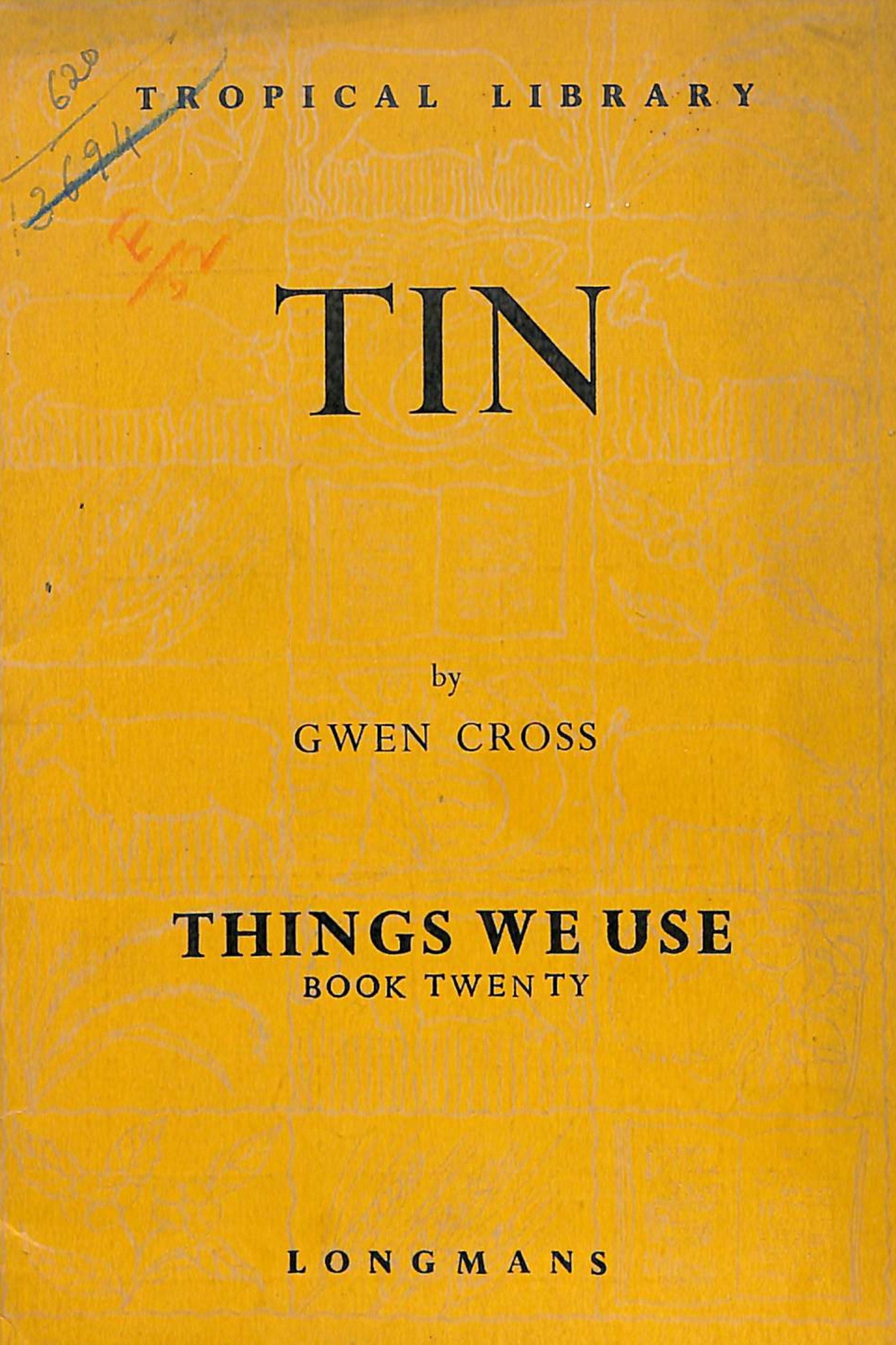

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TIN

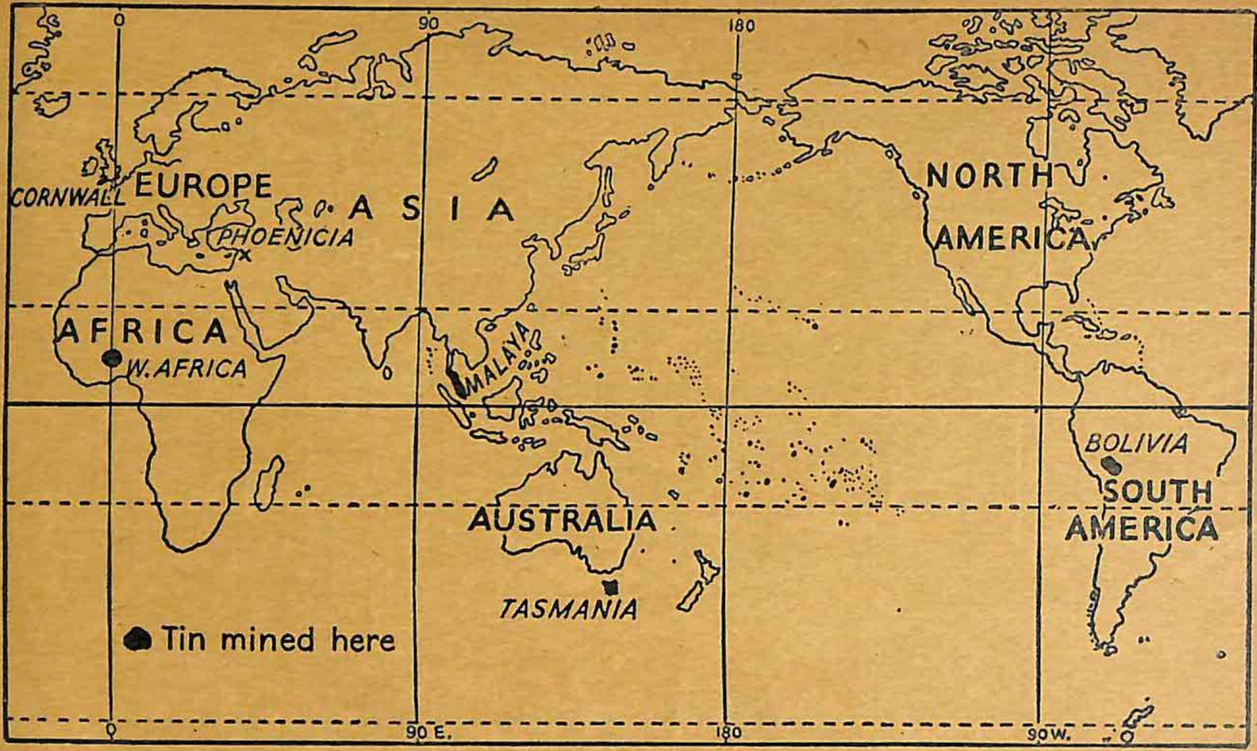
by

GWEN CROSS

THINGS WE USE

BOOK TWENTY

LONGMANS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CHAPTER 1

A TIN

MANY of the foods we eat are in tins. If we go into a store we shall see many, many tins of food and other things: tins of milk, meat, fish, fruit and vegetables; tins of kerosene and benzene; tins of paint and oil. We shall see little tins, big tins, round tins, square tins, long tins, all full of things we want. What is a tin made from?

A tin is not made only with tin. It is made from very thin iron. It has a very thin layer of tin over each side of the iron. If the tin was made with all tin it would cost much money to buy it, because there is not very much tin in the world. There is much more iron.

Very few things are made with tin only. Tin kettles, tin cans, tin plates are made with a layer of tin over iron. Sometimes a layer of enamel is put over iron to make enamel basins, pannikins and plates. Americans call tins "cans." They talk about canned food and not about tinned food.

Iron rusts quickly in damp air. Tin does not rust. A layer of tin over iron protects the iron from the air. Then the iron does not rust. If men packed

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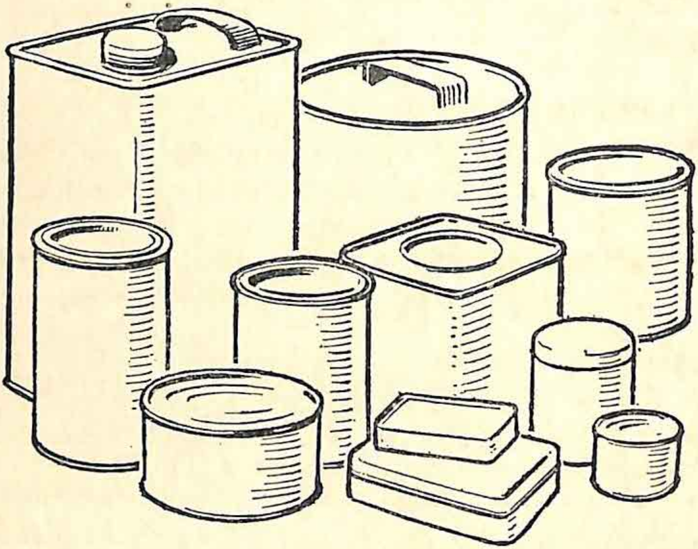
food in iron, the iron would rust and the food would be bad.



If we keep tins of food a long time or if we let an empty tin stand in the rain, we shall see the tin become rusty. It is not the outside layer of tin that has rusted, but the layer of tin has been damaged. When the outside tin is damaged the air touches the iron and the iron rusts.

A very, very small piece of tin knocked off the iron lets the air touch the iron. When rust begins it soon spreads. It makes more tin come off the iron and the iron that was under the tin then becomes rusty. It is not long before all the tin comes off the iron and only an old rusty piece of iron stays. The rust soon makes a hole in the iron and then it leaks.

THINGS TO DO

1. Collect any tins of food that you can. Write down their names and where each was made. Find these places on a map.

2. Draw something that is made with tin OR design a label for a tin of marmalade or a vegetable.

QUESTIONS

1. What two things are used to make a tin?
2. Why is a layer of tin put over the iron?
3. Name three things in tins that are not foods.
4. Which is the thickest covering on iron, tin or enamel?

A. Airless means without air. What do these words mean:

treeless noiseless endless meatless

B. Make a vocabulary of these words like this:
  1. Write them in alphabetical order.
  2. Write by the side of each its meaning:

damage buy cost put protect touch
begin make pack leak eat

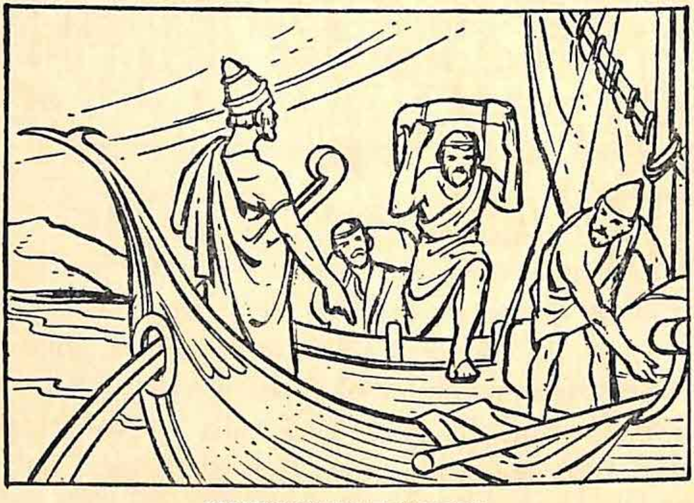
C. Finish these sentences:
  (*a*) Iron . . . in the air.
  (*b*) Tin costs much . . . .
  (*c*) Americans call tins, ...

CHAPTER 2

TIN MINES

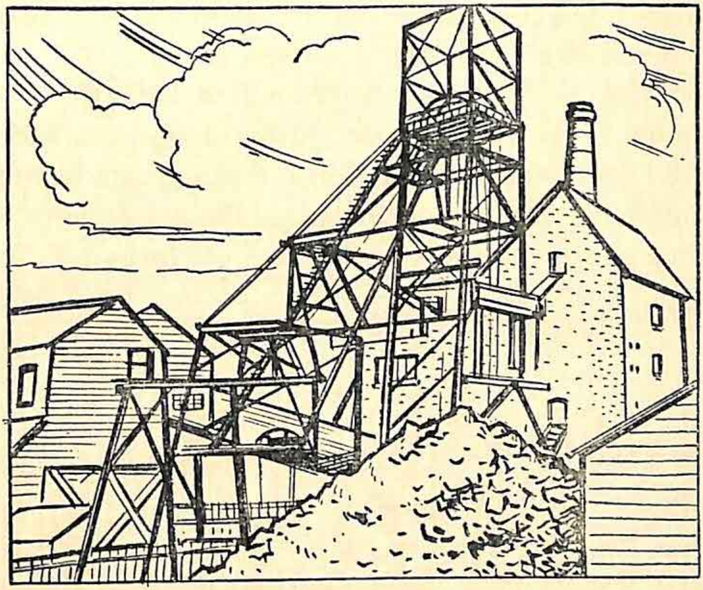
TIN is found in the ground. Sometimes it is in lumps or lines in cracks between hard rocks. Sometimes it is at the bottom of rivers, or places where there were rivers long ago.

When tin is deep in the ground, men dig for it in mines. The tin mines in Cornwall, England, are the oldest mines in the world. Many years before our Lord was born the people of Phoenicia came to England to get tin from the British tin miners in



PHOENICIAN TRADERS

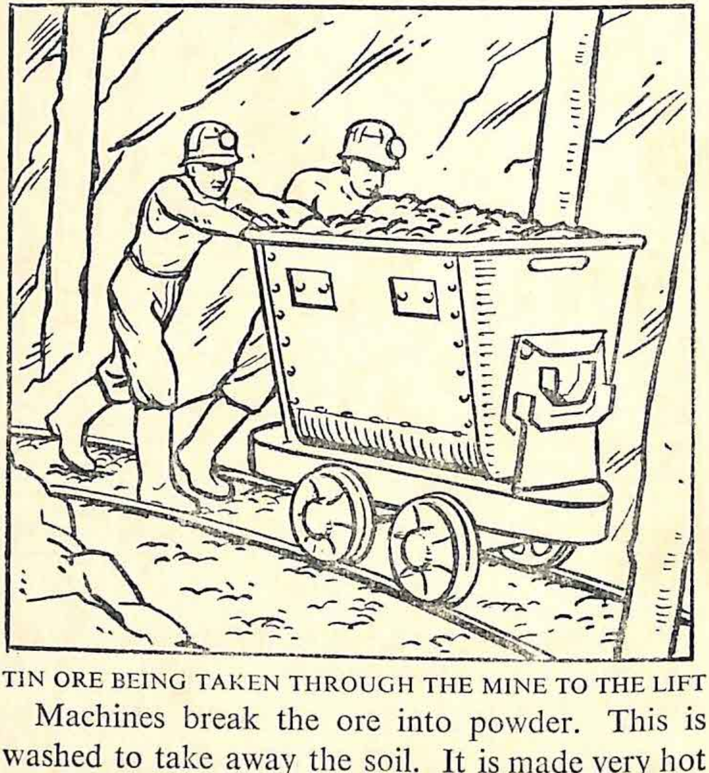
Cornwall. There are still tin mines in Cornwall. Some of them have not been open for many years. In war-time, when it was difficult to bring tin to England in ships from across the sea, men opened these old mines and dug tin from them.



A TIN MINE

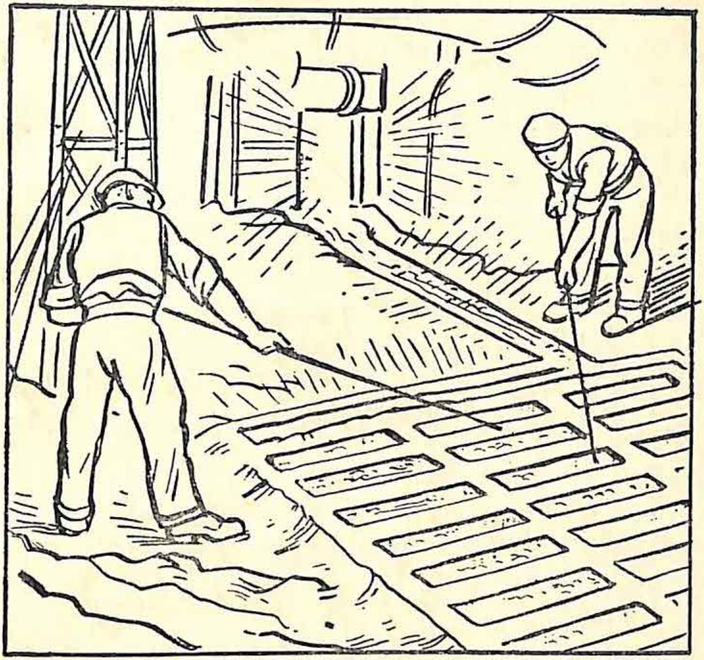
Some tin is very deep in the ground. In the mines there are miles of tunnels. Men go down into the mine in strong steel "lifts." Very strong steel rope holds the lifts. They go up and down with the help of machines.

A rock from which we get metals like tin, silver, copper or lead, is called ore. Down in the mine men or machines dig the tin ore. It is carried on wheelbarrows or in trucks on iron rails to the lift. It goes up the mine in steel baskets or in the trucks in the lifts.



TIN ORE BEING TAKEN THROUGH THE MINE TO THE LIFT

Machines break the ore into powder. This is washed to take away the soil. It is made very hot in a furnace. This is called smelting the ore. The hot liquid tin flows from the furnace into moulds, like a silver river. When it is cold it makes hard shining blocks of tin.



HOT LIQUID TIN FLOWING FROM THE FURNACE INTO MOULDS

Men get tin from mines in Bolivia, South America, from West Africa and from parts of Australia and Tasmania. Very much tin was used in the war. Many things are now put into glass or plastics.

THINGS TO DO

1. Trace a map of the Mediterranean Sea and Europe as far as England. Show with a dotted line the voyage of the Phoenicians from Tyre to Cornwall. Name seas, bays, etc., on the voyage.

2. Find on a map the places where tin is mined. How would you go from your country to (*a*) Tasmania; (*b*) Bolivia?

QUESTIONS

1. Where is tin found?
2. Where are the oldest tin mines?
3. What is *ore*?
4. What carries the ore to the top of the mine?

A. Change one letter in these words to make other words:

shell this sin but think meet
dish saint where line hot keep

B. Make adverbs from these adjectives:

slow loud quick heavy soft

Make nouns from these words:

rusty windless dirty beautiful muddy

C. Write these sentences in the right order:

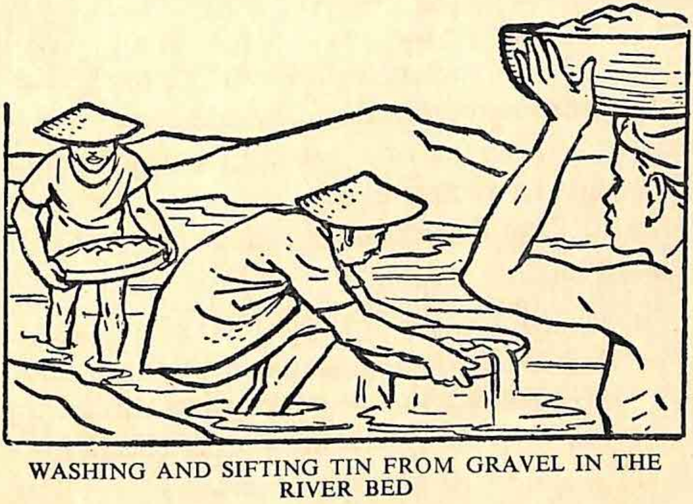
(*a*) The ore is smelted in a furnace.
(*b*) Machines break the ore.
(*c*) Tin flows into moulds.
(*d*) Men dig tin ore from the mines.

CHAPTER 3

TIN FROM RIVER BEDS

LONG ago rain washed tin from cracks in the sides of mountains and carried it to rivers. When a river flows quickly it carries stones, sand and mud with it. When it flows slowly stones, sand and mud sink to the bottom of the river. The bottom of a river is called the river bed. In Malaya there is much tin in river beds and in places where a river flowed years ago.

Many small stones together are called gravel. For many years the Malayans collected gravel in

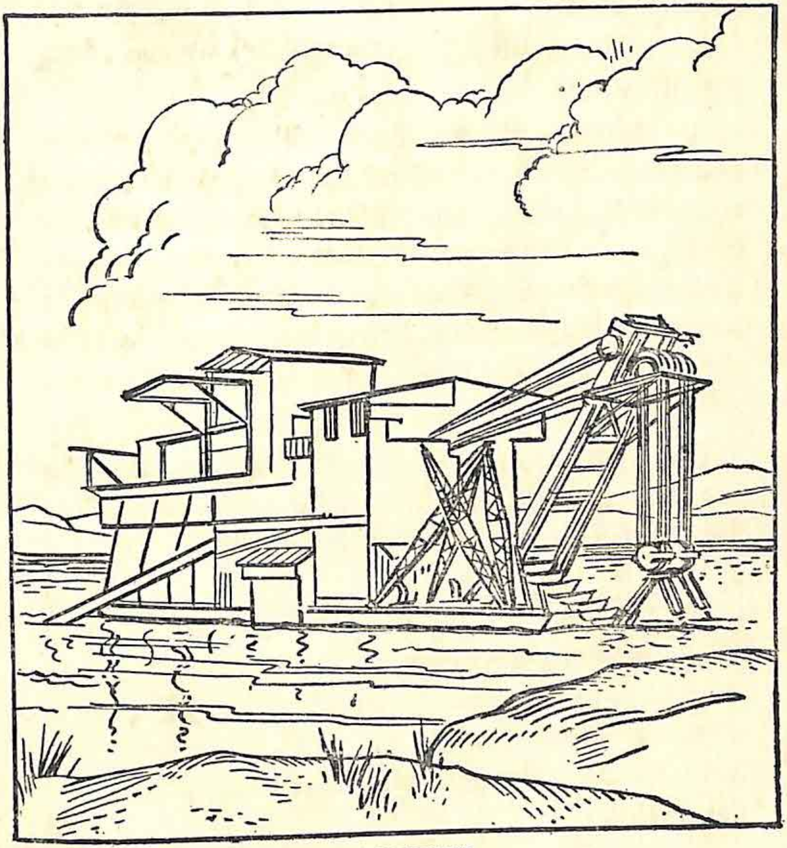


WASHING AND SIFTING TIN FROM GRAVEL IN THE RIVER BED river beds, and washed and sifted it to get the tin. Now men get tin from river gravel by machines called dredgers.

A dredger is like a big raft with engines, pumps and buckets on it. The buckets are fixed in a line on a chain. The ends of the chain are joined to make a circle. A machine pulls the chain round. It goes down into the river with the buckets. The buckets scoop up the sand and gravel, and the chain pulls them out of the river. When some buckets are coming up full, others are going down empty.

A machine turns the full buckets over so that the sand and gravel fall into a barge at the side of the dredger. The empty buckets go down to the river again. A machine washes and sifts the gravel. It collects the tin and the rubbish falls into the river at the back of the dredger. From a ton of gravel men sometimes get one pound of tin. The tin is dirty and often looks black. It is smelted and the hot melted tin flows into moulds and makes clean shining tin.

If men find tin in a dry river bed machines dig a deep hole. Water is pumped into the hole, and a dredger gets up the tin. As the dredger fills the hole with rubbish at the back it digs a new hole in front. The dredger goes forward like this.



A DREDGER

In some rivers and harbours dredgers are always working because sand and mud sink and make the water shallow. Dredgers take up the sand and make the water deep again for ships.

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THINGS TO DO

1. Stir some small stones, sand and mud in a glass of water. Watch them go round in the water. Stop stirring. Watch them sink. Which sinks first?

2. Trace a map of Malaya and the countries next to it. Show and name Burma, Java, Indo-China, Penang. What great port is south of Malaya? Name it in the map.

QUESTIONS

1. What is a dredger?
2. Why are dredgers always working in some harbours?
3. How much tin may men get from one ton of ore?
4. In what country do men get much tin from river beds?

A. Read paragraph 3 again. Tell how a dredger gets up gravel from a river.

B. Put these words in pairs to make other words:

rail for friend work give ship
hand way get

C. Write one word for these things:

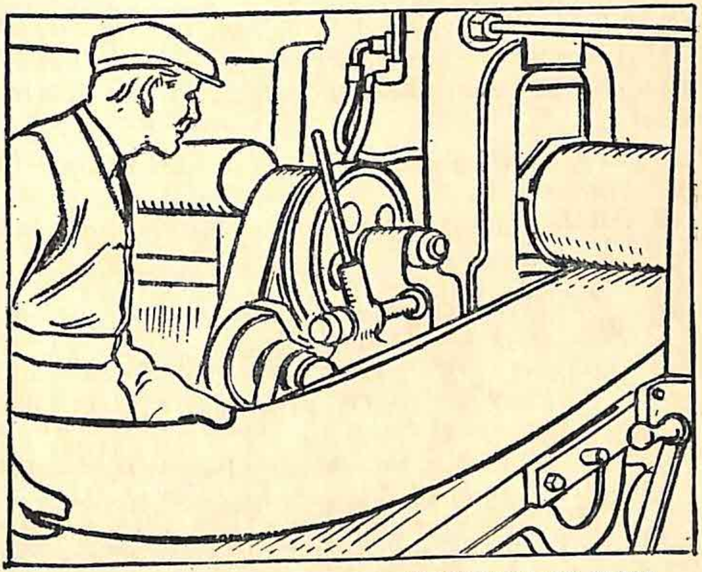
(*a*) Rock dug from the ground mixed with metal.
(*b*) Heating this rock in a furnace so that the metal flows out.
(*c*) A machine that makes a narrow bore in the ground.
(*d*) Deep holes in the ground from which men dig rock and metals.

CHAPTER 4

HOW TINS ARE MADE

TINS are made with two things, tin and iron. Men dig iron from the ground in iron mines. The iron ore is broken and smelted. White-hot iron flows into moulds. When cold, it is grey and hard.

This iron is melted again. It flows into shallow trays. Machines roll it and make thin, flat sheets of iron. These are cleaned and polished and then washed in hot acid. This dissolves anything that

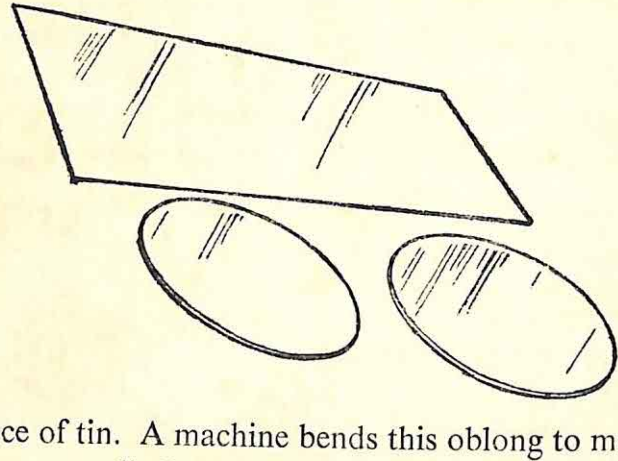


MACHINE MAKING THIN FLAT SHEETS OF IRON

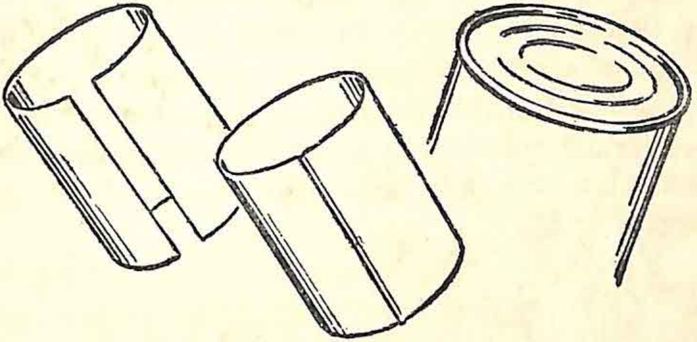
sticks to the iron. Rollers press the dry sheets again. Then they are rubbed with fine sand to make them clean and shining. A layer of tin will not stick to the iron if it is rough or dirty.

Blocks of tin from the tin furnaces are melted in big tanks. The sheets of iron are dipped into hot grease and then into hot tin. A little tin sticks to each side of the iron. These sheets are dipped into a second tank of hot, liquid tin. More tin sticks to them.

The sheets of iron covered with a layer of tin on each side are now dried, washed, dried again and polished. Machines cut them into pieces. For each round tin it cuts two round ends and an oblong piece of tin. A machine bends this oblong to make an open cylinder and joins the sides together. It



presses one round of tin on the end of the cylinder and bends them together to make a hard edge. This hard edge makes the tin strong.



The tins go to different factories to be filled. Lids are pressed on to make another hard edge at the top of the tin. Many people have worked to make each tin. Millions of tins of different shapes and sizes are made every year. In war-time people collected clean empty tins and sent them back to the factories. There the tin was melted from the iron. The iron went back to the iron factory. New tins were made from old tins.

THINGS TO DO

1. Collect tins of different things. Measure their heights and widths. Draw a circle on a piece of paper. Draw a line across the widest part of this

circle. Write on it the word *diameter*. Write round the circle the word *circumference*.

2. Measure the circumference of a round tin with a piece of cotton, and then a ruler. Measure the height of the tin. From these two measurements draw an oblong. Stand the tin on your paper and draw round it. Do this again so that you have two circles. Now cut out your two circles and the oblong. They are pictures of the tin used for making this tin.

QUESTIONS

1. Why are the iron sheets made very clean?
2. How many times is each sheet dipped into hot tin?
3. Why do tins have hard bent edges at the top and bottom?
4. Make a list of all the things you can that men get from mines in the ground.

A. Read paragraph 3 again. Why do you think the iron sheets are dipped into grease before they are dipped into the tin?

B. Put together the halves of the words in these two columns to make names of countries:

Brit
Gre
Mal
Ja
Ch
Amer
Tasma

nia
ica
ina
ece
ain
aya
pan

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You may find these words difficult. When you meet them in the book try to think out for yourself what they mean. If you cannot do this, ask your teacher for help.

Nouns	*Adjectives*	*Verbs*
acid	canned	scoop
dredger	rusty	smelt
enamel	tinned	
gravel		
lift		
ore		
raft		
river bed		

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6. A Tin of Meat
7. A Tin of Milk
8. A Tin of Butter or Cheese
9. A Woollen Blanket
10. Cotton and Other Threads
11. A Bar of Soap
12. A Packet of Needles
13. Oil
14. A Lead Pencil
15. Paper and Books
16. Money
17. A School Rubber
18. Salt
19. Glass and Plastics
20. Tin
21. A Cup of Coffee
22. A Bar of Chocolate
23. Silk
24. Leather

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